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Digital Transformation: Life Science Industry with SAP S/4 HANA Cloud Technologies

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Abstract Digital Technologies are key to innovation in Life Science industries with subdivision of pharmaceutical engineering, Medical Device manufacturing, and Biotechnology/Biomedical engineering industries. Historically, the Life sciences industry has been slow to adopt and integrate digital functions across the value chain (from R&D to commercial). Life Science industry is most critical and time sensitive industry which proves in recent experience during pandemic situation in Covid period. But now SAP took this as a challenge and SAP S/4HANA platform assists Life sciences companies to succeed in transforming processes digitally. Pharma 4.0 uses digital technologies – such as Cloud, AI, IoT, and blockchain – to connect patients and systems for greater visibility and efficiency. The robust SAP NetWeaver platform easily integrates SAP with other non-SAP applications for lower cost of ownership. This article explains the benefits and broader analysis of how SAP S/4 HANA brings transformation in Life Science industries with its challenges and Pros/Cons. Major transformation can be done with intelligent Cloud ERP. It will also highlight the proven best practices, Fast time to value, Automatic and Continuous update, Security, Compliance, Scalability, and continuous innovation with option of extension with other technologies.

Keywords AI (Artificial Intelligence), IoT (Internet of Things), Blockchain, SAP NetWeaver, Pharma 4.0, SAP S/4 HANA, SAP Cloud

1. Introduction

The Healthcare industries has several reasons for Digital transformation, particularly with SAP S/4HANA Cloud, has become increasingly vital in the Life Science sector:

Rising R&D Costs: The escalating costs of drug development pose a significant challenge. SAP S/4HANA Cloud enables Health care companies to improve R&D efficiency through real-time insights and analytics, making informed decisions on drug development and resource allocation.

Intellectual Property Protection: Safeguarding intellectual property is crucial in the health care industry, given the substantial investments required for drug development. SAP S/4HANA Cloud enhances data security measures, including advanced security features, data privacy controls, and secure data management.

Streamlined Supply Chain Management: Managing the pharma supply chain involves complex processes with multiple stakeholders. SAP S/4HANA Cloud provides real-time visibility into inventory levels, better demand forecasting, and optimized logistics processes, leading to improved supply chain management.

Enhanced Data Security: With the increased utilization of Digital technologies, Data security is a paramount concern. SAP S/4HANA Cloud offers advanced security features such as data encryption, identity and access management, and threat detection/response which bolstering data security measures.

Foster Innovation: Innovation is crucial for pharma companies to outpace competitors. SAP S/4HANA Cloud facilitates collaboration, knowledge sharing, and Agile development processes, empowering companies to drive innovation within their organizations.

SAP S/4HANA Cloud plays a vital role in helping Life Science companies overcome these challenges and achieve their goals by providing real-time insights, strengthening Security, optimizing Supply chain management, and fostering innovation, SAP S/4HANA Cloud equips pharma companies with the tools necessary for success in an ever-evolving industry.

Digital transformation with SAP S/4HANA Cloud will continue to play a pivotal role in the evolution of the Life science industry. As new technologies emerge and regulatory pressures increase, embracing digital transformation will be crucial for Pharma/Medical companies to remain competitive and meet the needs of patients and healthcare providers.

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SAP S/4 HANA transformation is much more than ERP upgrade. Depending on Health Care industry (Biotechnology, Biomedical, Pharmaceutical and Medical devices) the implementation goals, the organization can reap transformative benefit including process excellence, business resilience, holistic innovation, data harmonization and connected experiences.

The growing need for Digital transformation in the Life science industry, powered by SAP S/4HANA Cloud, is evident. By embracing digital technologies and transforming their operations, pharma companies can enhance drug development, engage effectively with stakeholders, and reduce costs. The benefits are clear, and companies that fail to embrace this change risk falling behind. It's time for Life science companies to seize the opportunity and embark on their digital transformation journey with SAP S/4HANA Cloud to secure long-term success in the industry.

2. Literature Review

As the Coronavirus pandemic has halted the world and we observed the Life Science industry stand together and competitively react to one of our era's biggest threats.

Key Sectors of Life Science industry like Pharmaceuticals, Biotechnology, Medical Devices, Biomedicines, Food processing etc. This industry is heavily regulated, with stringent guidelines and protocols to ensure the safety, efficacy, and quality of the drugs.

Another study highlights that the healthcare industry, which was already struggling with a pandemic, had major challenge of Supply chain. The supply chain, ERP, and SAP go hand in hand. This explains why deploying proper IT solution like SAP S/4 HANA provided the revolutionizing Supply Chain and using necessary technology in collaboration with modern cloud AI, Big Data, is critical.

Dadong Li, Chief Information Officer of Legend Biotech talks about his experience and reasons to choose SAP S/4HANA in which he mentioned about Qualified to meet GXP Compliance requirement, How SAP seamlessly integrate with LiveScience Ecosystem, helps in Future Innovations, Scalability and Flexibility of SAP S/4 solution and Enhanced User Interface (easy to user access across desktop, Tablets, and smartphones).

In another success stories, Japanese Life Science company developed a template in SAP S/4 HANA which can unify regionally divergent processes and effectively deliver its services and products to streamline their Supply chain process with good balance of global governance and regional execution excellence endeavoring to Japan centric manufacturing business model.

Raumedic AG, a European MedTech company, faced challenges presented by the European Union's medical device regulations and needed to maintain compliance with unique device identification (UDI) standards in the US. With SAP's industry cloud and the UDI Platform by SAP partner p36, Raumedic successfully established new business processes for master data management and a single source of truth for UDI master data. By turning to SAP and p36, Raumedic was able to improve agility of business processes and readied the business for the future.

According to the leading Life Science IT solution provider like Accenture, Deloitte, EY shares their experiences of investing in SAP S/4 HANA with preferred cloud services and some of them are listed here such as Embed New Technology via integration, Reinvent the Supply Cain with flexibility and more responsive, personalize with purpose with custom tailored solution, Accelerate and improve decision making based on real time data/reports.

3. How can SAP S/4 HANA Enable Digital Transformation for the Life Science industry?

The Life sciences industry has been facing many challenges, including expiring patents, eroding margins, broken supply chains, and changing demand dynamics. Besides, patient and payer expectations are now moving towards personalized, cost-effective treatments.

Personalized medicine is gaining significance in R&D cross disease domains, including cardiovascular, gastroenterology, and infectious diseases. Globally, the personalized medicine market is expected to grow to USD 2.77 trillion by 2022, from USD 1.26 trillion in 2015, according to Statista.

In this new reality, the imperative for life sciences companies is to become patient-centric and respond to these changing demands through digital transformation. The need of the hour for life science companies is to move forward with a well-defined Digital transformation strategy, especially amidst these persistent challenges, disruptions, and the ongoing pandemic situation. One of the most impactful approaches to drive transformative outcomes is to build a unified and centralized digital core. This digital core would then become a platform that enables digital transformation across the organization, ensuring better responsiveness, improving operational agility, and driving the leverage of data-driven insights to address business challenges and grow revenue.

- As a primary enabler in this process, intelligent enterprises need an intelligent ERP such as SAP S/4 HANA as its digital core. An intelligent ERP will enable an enterprise to.
- Scale business processes to support growth.
- Connect multiple business functions and data sources to make decisions in real-time.
- Eliminate data silos and foster usage of AI-Analytical capabilities to analyze data and gain mission-critical insights.

- Perform what-if analysis to understand the outcomes of multiple courses of action.
- Embed corporate and legal policies to ensure compliance while being patient centric.
- Support and standardize various processes such as finance, supply chain, and manufacturing.

4. Life Science Companies Should Transform with the Help of an Intelligent ERP

4.1. Build Digital Supply Chains

McKinsey estimates that companies can expect supply chain disruptions to last a month or as long as 3+ years. The outbreak of COVID-19 has only exacerbated the fundamental problems in global supply chains. With many moving parts involved in supply chain management, real-time end-to-end visibility across the value chain is critical to adjust to rapidly changing demand cycles. It requires building robust, resilient digital supply chains, connecting them to relevant back-end functions, and enabling transparency.

4.2. Drive More-innovative R&D

Innovation is critical for life sciences companies amid expiring patents and patients' expectations for cost-effective treatments. It requires transforming traditional R&D models using emerging technologies, such as IoT, implementing telemedicine solutions, and performing analysis using AI to achieve the next breakthrough. Accordingly, life sciences should make data-empowered decisions a critical part of R&D efforts/processes.

4.3. Modernize Compliance

Life sciences companies need to be ahead of regulations to drive growth. Given the size and complexity of the life sciences companies, mounting pricing pressures, and increasing regulatory oversight, it is critical to assess existing compliance processes and modernize them. This will allow them to meet the speed and agility required in the current life sciences ecosystem while utilizing modernization efforts to drive down compliance costs.

4.4. Become Patient-Centric

SAP estimates that by 2025, life sciences companies are likely to deliver personalized patient solutions at scale, as a service. Now is the right time for life science companies to rethink and strategize patient-centric, personalized solutions. It requires thinking in customer "segments of one" and gaining insights into patient conditions and their response to treatments. The intelligent ERP can enable data collection through smart devices used by patients and then glean insights from data to improve the patient experience and deliver better outcomes.

5. Life Science Companies Experiencing the Digital Core Advantage

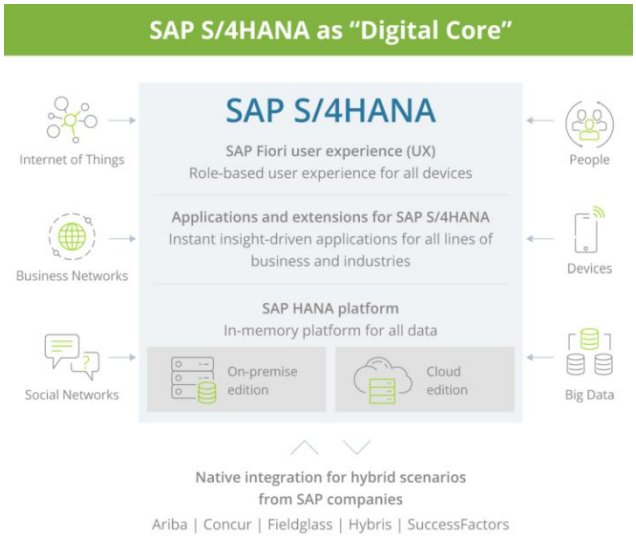
Some industry-leading, innovative life sciences companies have implemented SAP S/4HANA to drive R&D, process optimization, and eliminate data silos. For example:

Moderna Therapeutics, a biotechnology company, based in Massachusetts, U.S., pioneering mRNA technology, has already shifted to SAP S/4HANA migration to achieve value-driven results and improve employee productivity.

Genor Biopharma, a Shanghai, China-based international biopharmaceutical company, has implemented SAP S/4HANA Cloud to achieve more-innovative R&D, eliminate data silos, and standardize various business processes.

6. Digitalization with Digital Core

Digitalization is the key to innovation – in Pharmaceutical engineering, Medical device manufacturing, and other Life sciences industries. Innovations that address the specific needs of the Life Sciences industry help you achieve cost-effective transformation and sustainable growth.



SAP and their partners provided some such innovative solutions specific to Life Science industry such as:

6.1. SAP S/4 HANA Cloud

Transform your pharmaceutical company with intelligent cloud ERP. You can use characteristic-based segmentation to match supply and demand, control materials, and more.

6.2. SAP Advanced Track and Trace for Pharmaceuticals

Simplify the distribution of medicines, reduce the cost of master data management, and automatically comply with drug serialization and country-specific regulations.

6.3. SAP Business Network for Life Science

Increase visibility across the supply chain, streamline collaboration with contract manufacturers, comply with

quality regulations, and improve inventory management.

6.4. SAP Intelligent Clinical Supply Management

Support more clinical trials – and more complex trial designs – with cloud software from SAP. The solution helps you reduce clinical supply chain cycle times and rapidly adapt to change.

6.5. SAP Batch release Hub for Life Science

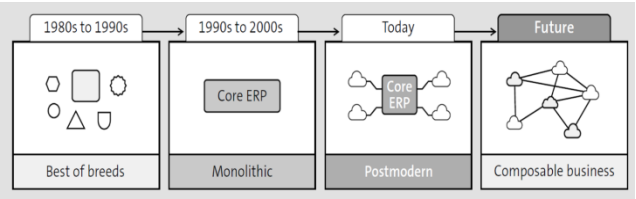
Automate batch release processes for medical devices and products. You can quickly align with regulatory needs by harmonizing quality data from different sources.

6.6. SAP Information Collaboration Hub

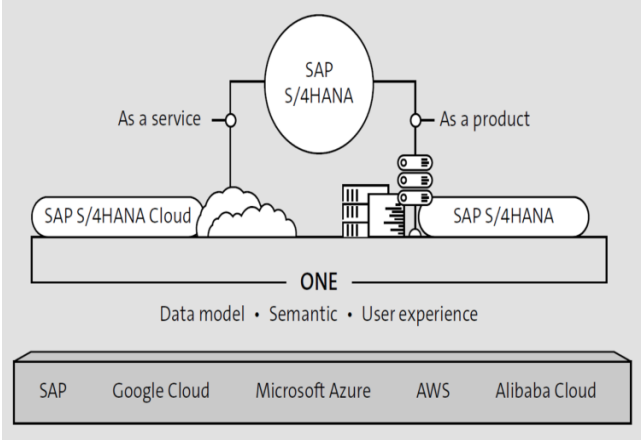
Provide a secure network to exchange large amounts of serialization data between MAHs, CMOs, 3PLs, and various regulatory reporting bodies.

7. SAP S/4 HANA Cloud Journey

ERP systems have come a long way in the past 30 years, but until about 5 to 7 years ago, the main way to run a solution was to purchase a software license and implement the solution in your own data center or at a hosting provider. This scenario has changed dramatically with the rise of cloud computing.



Based on this foundation, SAP has extracted all elements into new natively rebuilt cloud elements, thus creating the SAP S/4HANA Cloud product stack. This stack fulfills the goals of a public cloud solution, such as a Multitenant architecture, Workload isolation, and the Segregation of duties, all delivered by SAP as SaaS provider.



The cloud is the default consumption model for both variants of SAP S/4HANA. In line with the most common definitions in the market, SAP differentiates between Public cloud, Private cloud, and Hybrid consumption. Which model you prefer depends mainly on the point of departure from which you're starting your ERP journey.

7.1. Public Cloud

A public cloud, which is completely managed by the software provider, is the most cost-effective option for consuming software and can deliver the fastest path to innovation for your organization. Therefore, this option is the only option SAP provides for its native cloud solution, SAP S/4HANA Cloud. This solution is based on a completely preconfigured solution delivery and market best practices and next practices.

7.2. Private Cloud

In a private cloud, you can consume cloud services that are not shared with other organizations but are instead dedicated solely to your company. This arrangement allows more flexibility and requires less standardization than moving to a public cloud SaaS solution. A private cloud is SAP's default offering for the on-premises SAP S/4HANA product stack. In this private cloud offering, SAP will deliver the software in an SaaS-like arrangement, running on a public cloud infrastructure technically operated by SAP.

7.3. Hybrid Cloud

Looking at the ERP landscapes of SAP's existing, large-scale customer organizations, SAP recognizes that they will run in hybrid environments for the foreseeable future, where SAP S/4HANA Cloud will be combined with SAP S/4HANA Cloud, private edition, or on-premises SAP S/4HANA implementations. Specific areas you want to move to a public or private cloud, and how fast, will be driven by your organization's digital transformation agenda and by the requirements of your business.

8. SAP Cloud Deployment Models

In general, any Life Science organizations can select among the following four deployment models and build several custom hybrid combinations on top of them:

8.1. SAP S/4HANA On-Premises

SAP's Bring Your Own License (BYOL) licensed software approach allows you to deploy a new system in your own data center.

8.2. SAP S/4HANA Private Cloud

You can choose to either host everything on SAP's managed enterprise cloud or use another cloud service, such as Azure, AWS, Google Cloud, or IBM Cloud.

8.3. SAP S/4HANA Public Cloud (Multi-Tenant)

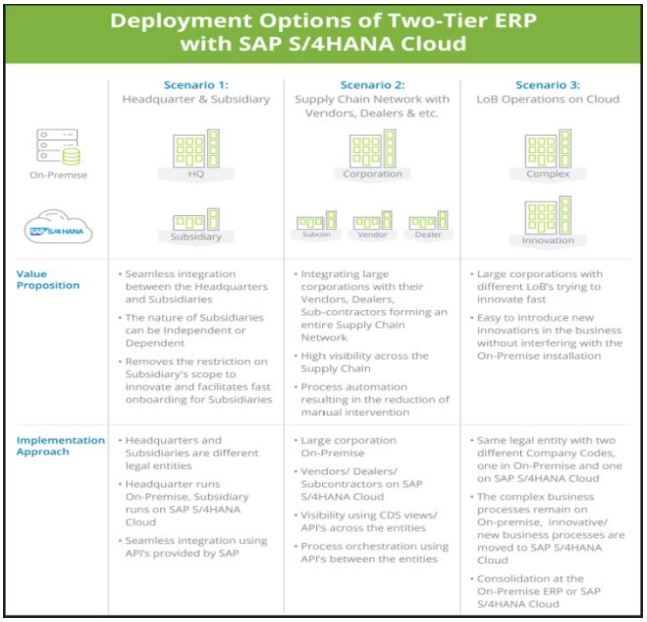
A SaaS offering from SAP that lets you run an SAP S/4HANA On-Premises Edition in the public cloud.

However, certain industry-specific functionalities may not be available.

8.4. SAP S/4HANA Public Cloud (Single Tenant)

This SaaS subscription option gives you access to the full spectrum of SAP S/4HANA, as well as new SAP S/4HANA public cloud functionality. Under this deployment model, however, you'll have to entrust the implementation and management process to SAP.

Additionally, larger Life Science enterprises should consider the Two-Tier ERP deployment model, aimed at harmonizing your operations between the headquarters and subsidiaries. SAP S/4HANA On-Premises and Cloud editions have native integration capabilities, allowing larger businesses to choose among several deployment scenarios:



9. A Complete, Integrated SAP Cloud Solution for Life Science Industry

The S/4 HANA Cloud solution automatically connects to an integrated suite of SAP applications to meet specific business needs, such as Ariba for purchasing, SAP Hybris for CRM, SAP SuccessFactors for Human resources management, SAP Analytics Cloud for operational reporting, predictive analysis reporting and dashboard creation.

9.1. SAP Analytics Cloud

Built on top of the capabilities of SAP BTP, SAP Analytics Cloud is a business intelligence (BI) solution that combines planning, BI, and predictive analytics capabilities. Highlighted features include analytics for both cloud and on-premises applications, data connectivity and blending from across different applications, smart assist features like smart insight, data visualization stories, collaborations, and more.

9.2. SAP Ariba

SAP Ariba is a collection of applications that manage procurement activities. This includes supplier collaboration, contract and invoice management, and spend analysis. It was originally launched independent of SAP as an internet-based procurement tool and was acquired in 2012.

9.3. SAP Business by Design

SAP Business by Design is a pre-configured ERP solution for medium-sized businesses that are looking for a robust ERP that won't break the bank. It includes features from the following functional areas: finance, customer relationship management, human resources, project management, procurement, and supply chain management. Industry-specific functionality is also available.

9.4. SAP Cloud ALM

SAP Cloud ALM is an application lifecycle management tool for SAP cloud solutions.

9.5. SAP Concur

SAP Concur is a travel and expense management application that can be utilized by employees to book business travel, get reimbursed for expenses incurred, and reconcile other employee-related, non-compensation-based finances. It was acquired by SAP in 2014.

9.6. SAP Customer Experience

SAP Customer Experience is a customer experience suite of solutions that consists of five cloud applications: SAP Commerce Cloud, SAP Customer Data Cloud, SAP Marketing Cloud, SAP Sales Cloud, and SAP Service Cloud.

9.7. SAP Data Warehouse Cloud

SAP Data Warehouse Cloud is a data warehouse built upon features from existing SAP data warehousing tools SAP BW, SAP BW/4HANA, and SAP HANA.

10. SAP Digital Manufacturing Cloud

SAP Digital Manufacturing Cloud is a collection of three applications (SAP Digital Manufacturing Cloud for insights, SAP Digital Manufacturing Cloud for execution, and SAP Digital Manufacturing Network) built to complement or replace the existing SAP Manufacturing Execution and SAP Plant Connectivity solutions.

10.1. SAP Fieldglass

SAP Fieldglass is an application focused on finding and hiring contingent workers such as temps or contract workers. It can be used to fill labor shortages that occur when demand is higher than expected or when existing labor is no longer able to complete the job. Similar to SAP Ariba, it was not initially developed by SAP and was acquired in 2014.

10.2. SAP HANA Database

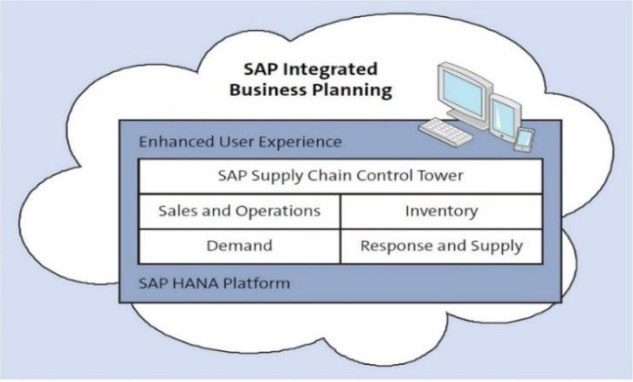
SAP HANA Cloud is the cloud version of the SAP HANA database and provides users with a single place to access, store, and process enterprise data in real time.

10.3. SAP HANA Enterprise Cloud

SAP HANA Data Enterprise Cloud is PaaS solution for customers to utilize SAP HANA in a cloud hosted by SAP or one of its strategic suppliers. Customers utilizing SAP HANA Enterprise Cloud get expert insight on how to run SAP HANA and can easily manage their operations and scale as desired.

10.4. SAP Integrated Business Planning

SAP Integrated Business Planning is a collection of supply chain planning applications that is based on the SAP HANA platform: SAP IBP for sales and operations, SAP IBP for inventory, SAP Supply Chain Control Tower, SAP IBP for demand, SAP IBP for response and supply, and SAP IBP for demand-driven replenishment. From a functional perspective, it serves as the successor to SAP Advanced Planning and Optimization.



10.5. SAP Intelligent Asset Management

A suite of five cloud-based enterprise asset management solutions: SAP Asset Intelligence Network, SAP Asset Strategy and Performance Management, SAP Predictive Maintenance and Service, SAP Predictive Engineering Insights, and SAP Mobile Asset Management.

10.6. SAP Logistics Business Network

SAP Logistics Business Network is a centrally located logistics operations tool that provides intercompany collaboration such as developing products among business units, across borders, etc. It is only available in the cloud.

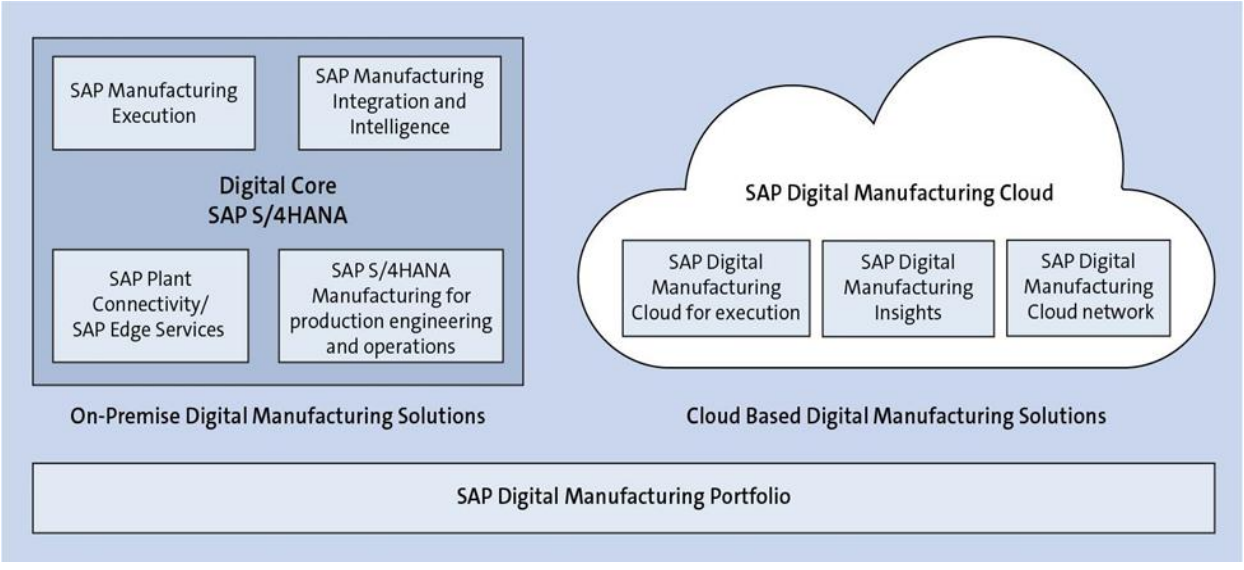
10.7. SAP SuccessFactors

SAP SuccessFactors is an across-the-board suite of human capital management applications. It incorporates core HR and talent management features such as recruiting onboarding, learning, and succession planning. It was initially an independent company before SAP acquired it in 2012.

10.8. SAP S/4HANA Cloud

SAP S/4HANA's introduction in 2015 was a key point in SAP's pivot to a cloud-first strategy. As time passed, SAP regularly added functionality to the cloud platform with quarterly updates and detailed SAP Community documentation on new features. Customers of SAP S/4HANA Cloud can currently take advantage of the finance, supply chain and supplier relationship management, sales, and R&D lines of business, with additional functionality such as an HR line of business being planned for delivery in 2022.

SAP S/4HANA Cloud customers get all the benefits of the cloud solutions, as well as the business advantages of SAP HANA's in-memory computing architecture. This gives them the ability to gain real-time business statistics and analytics.



Category	AWS	Azure	Google Cloud
Overview	AWS offers a broad platform of services with the largest partner ecosystem & marketplace of 3rd party products. Strong solution offering is coupled with good customer service	Microsoft Azure is the largest player in IaaS as well as integrated IaaS+PaaS offerings with very high growth rate over the past multiple years	GCP has a well-implemented core of fundamental IaaS & PaaS capabilities, but its feature set and scope of services are not as broad as that of the market leaders
Summary	• Mature product for SAP workloads • Wide array of SAP supported solutions • Years of experience deploying SAP solutions • Monthly uptime service commitment of >=99.9% depending on services • Provides a range of payment plans based on the instance type selected • Provides flexible discounts, unit cost cuts & free tiers.	• Mature & Faster growth phase for SAP workloads • Supports essential SAP solutions • Lack of experience when compared with AWS • Provides commitment of >=99.9% availability on services • Provides attractive pricing & additional flexibilities for customers • Provides one of the highest cost for large, xlarge and 2xlarge server & Bills on a per-minute basis.	• In growth phase to develop SAP capability • Essential SAP components + recent additions for Business Suite • Monthly uptime service commitment of >=99.9% depending on services • Provides sustained use discounts(No upfront payment required) • Pricing is simple; GCP Pricing Calculator available & Bills on a per-minute basis.
SAP Hosting and solutions (Maturity for SAP Applications)			

11. Preferred Cloud Platform for SAP S/4 HANA

SAP, a leading provider of enterprise software solutions, offers its own cloud platform called SAP Cloud Platform (SCP). SAP Cloud Platform provides a secure and scalable infrastructure for developing, deploying, and managing SAP applications and services in the cloud.

However, it's important to note that SAP applications can also be deployed and run on other popular cloud platforms, such as *Amazon Web Services (AWS), Microsoft Azure, Google Cloud Platform (GCP), IBM Bluemix Softlayer, Alibaba Cloud, Huawei Cloud, and T-System Open Telekom Cloud.*

SAP has partnerships and collaborations with these major cloud providers, allowing customers to choose their preferred cloud environment for hosting SAP applications and services.

SAP S/4HANA Cloud, Private edition-

SAP S/4HANA Cloud, private edition includes managed service of infrastructure layer. Single vendor accountability for ERP license, Maintenance & operations – Hyperscaler infrastructure and Technical Basis layer.

- Allows dynamic and flexible consumptions of user license type based on changes/improvement in business process, user roles and degree of automation.
- Cost of subscription is lesser than On-premises perpetual license (one time) + maintenance cost (yearly) and Datacenter hosting costs.
- Cloud Connector: The SAP Cloud Connector provides a secure tunnel between SAP Cloud Platform applications and on-premises systems.
- Annual upgrade is included in the subscription.
- SAP S/4HANA Cloud, private edition SLA covers the ENTIRE Solution stack at SAP login level with default SLA: 99.7%.

12. Building Future-Ready Intelligent Enterprise with SAP S/4HANA

Emerging & innovative technologies such as Machine Learning (ML), Artificial Intelligence (AI), Internet of Things (IoT) Robotics Process Automation (RPA), Predictive Analytics and Conversational AI enables businesses to innovate, optimize experience, and automate processes.

They are fully integrated into the individual SAP solutions, and on the other hand, they are provided side-by-side via the SAP Business Technology Platform (BTP).

SAP's technology approach for the intelligent enterprise focuses on three components: the operations, the experience, and the intelligence. Operational data is the "what" of business data, like transactions, which are collected from day-to-day processes.

The digital platform: The Digital Platform provides a bunch of applications that enable the collection, connection, and orchestration of data (SAP® Analytics Cloud - SAC, Master Data Management - MDM and Data Warehouse Cloud - DWC) as well as the integration and extension of data-rich processes in integrated applications (SAP Cloud Platform - SCP) within the intelligent suite.

SAP Intelligent Robotic Process Automation (iRPA) technology services are available now to automate business processes and increase productivity through "digital bots."

These software robots replace manual tasks, interpret text-heavy communications or assist end users with definable and repeatable business processes. SAP Intelligent RPA is tightly integrated into SAP Cloud Platform and digital core solutions from SAP such as SAP S/4HANA.

SAP acquired Contextor SAS, a European leader in the design and integration of RPA, to help SAP accelerate the development and expansion of its SAP iRPA portfolio. RPA is a software robot (also called a bot or digital assistant) that is executed on the end-user's machines or servers and either in the foreground or background. SAP iRPA provides traditional RPA capabilities along with seamless integration possibilities with technologies such as SAP Conversational AI, SAP Workflow Management, and various other services (e.g., document processing and machine learning models).

13. SAP S/4 HANA Architecture Extend (Life Science Industry): Cloud Version

Many Life Science organizations have already done implementing S/4HANA systems and many are doing projects/waiting to jump into the train with green/brownfield implementations.

In cloud application pattern, while their S/4HANA systems doing the regular work, customers create extension-applications in the cloud (SAP BTP); they have additional options to use cloud services such as API management, Workflows, Business rules and publish the information from their systems to the outside world via controlled APIs.

In the meantime, these applications use & merge the data coming from the on-premise systems via OData APIs and through business events. (For instance, you can easily build a scenario where a new sales order in S/4HANA system will trigger your extension cloud application, then it will notify (a) third party application(s) expecting the order & product details through integrated services).

This information can be served to the end-users via Mobile or Web UI technologies. One example would be Fiori / SAPUI5 but it's not the only one. For another option, custom applications may use the data through secure APIs controlled by SAP BTP's API Management Services. (you can control how, when, what amount through policies to keep your data and apps tidy and secure).

Coming to the Human resources capabilities for generating these applications, your developers do not have to be ABAP profiles only, you can generate services with Java or Node.js and SAPUI5 which is another advantage.

There are many other advantages for this pattern like-

- The focus on end users outside your organization easier and vice versa as they can use your controlled data and build their own apps and use standards'-based APIs - where they do not need your human resources in order to integrate these apps.
- To automate the development cycles and make them flexible as the backend system is not tied to these extensions, and Cloud DevOps services offer many automations making the cycle faster. In the meantime, to separate the backend from custom logic, these two can be operated-upgraded separately. One example of these DevOps services is project Piper which I will write about afterwards.
- To create quick Proof-of-Concept and Pilot Applications. For instance, can create a mobile application with SAP's new low code no code platform #AppGyver and integrate your services within the same platform.
- To get benefit from other cloud and #BTP services such as centrally manage your user authentication via identity authentication services or use cloud eventing (event Mesh) for triggering applications after business and technical events. No need to keep on premise services, applications, and databases for these requirements.
- To use modern technologies to integrate with other SAP and non-SAP solutions. For instance, the change in the data from SuccessFactors system and immediately trigger a business event-use and enhance the data within on-premises SAP system. This cycle can also be triggered via third party application which gives you more data that is not available in SAP Landscape such as information of 3rd party project management system. The architecture here would be designed so that cloud system will be a hub to send this information to on premise S/4HANA system at the same time to SuccessFactors to trigger other business processes.

14. How SAP S/4HANA Public Cloud Elevates Healthcare Engagement?

The pharmaceutical industry is worth billions of dollars, and companies operating in this sector are constantly looking for ways to improve their products and services. One area that has seen a lot of improvements in recent years is technology, with SAP S/4HANA Public Cloud being one of the most significant innovations.

14.1. Real-Time Insights and Analytics

SAP S/4HANA Public Cloud offers real-time analytics and insights, enabling pharmaceutical companies to make informed decisions based on accurate data. By using this system, companies can quickly analyze patient data, market trends, and financial information, thus enhancing their engagement with patients, doctors, and other stakeholders.

Download Free Report to Explore how fast-growing pharma companies are focusing on operational sustainability, and business transformation to improve efficiency, revenue and growth.

14.2. Improved Supply Chain Management

The pharmaceutical industry involves complex supply chains that involve numerous stakeholders. SAP S/4HANA

Public Cloud simplifies this process by providing a centralized platform for managing all supply chain functions. This way, companies can track inventory levels, manage orders and deliveries, and monitor supplier performance. The improved transparency and efficiency of the supply chain can help improve customer experiences and enhance engagement.

14.3. Personalized Engagement with Patients

The pharmaceutical industry is moving towards a more personalized approach to patient care, and SAP S/4HANA Public Cloud is helping to facilitate this. The platform enables companies to collect and analyze patient data, allowing them to create customized treatment plans. With this system, patients can receive tailored medical advice and treatment, thus fostering a closer relationship between patients and pharmaceutical companies.

14.4. Enhanced Collaboration with Healthcare Providers

SAP S4 Hana for the life science industry helps healthcare providers in real-time, streamlining communication, and improving collaboration. This helps to ensure that patients receive the best care possible, thanks to intelligent algorithms that can identify their unique needs.

14.5. Better Financial Management

Financial management is a critical aspect of any business, and the pharmaceutical industry is no different. With SAP S/4HANA Public Cloud, companies can manage their finances more efficiently, from invoicing to budgeting and forecasting. This way, pharmaceutical companies can make more informed decisions and optimize their financial performance, ultimately leading to better engagement with stakeholders.

15. SAP S/4 HANA Benefits to Life Science Industry

Pharma 4.0 is an emerging stage of industrialization, which is disrupting the life science industry and forcing leaders to redesign their core business processes, and even transform their business models.

- With the current transition to SAP S/4HANA, organizations are seeking new solutions that offer maximum benefits and enable them to optimize their quality control (QC) activities, streamline laboratory processes and providing additional functionalities for quality assurance (QA).
- According to ERP Team Lead, Seegene Inc South Korea, the S/4 HANA Cloud private edition helps harmonized and optimized Global operations which help improve lives across the world with new diagnostic paradigm.
- S/4 HANA helps to Life Science industry in major 5 processes like Regulatory Compliance, Inventory Management, Quality Control, Sales Controls, Financial Visibility and Reporting.
- The future of life sciences will likely be shaped by tech-enabled connectivity, strategic uses of AI, and patient-centric supply chains and SAP already did big announcement about SAP Business AI capabilities across our portfolio to the launch of our generative AI co-pilot ‘Joule’.

16. Conclusions

SAP S/4HANA Public Cloud is changing the way the pharmaceutical industry operates. By enhancing the supply chain, improving patient engagement, and streamlining communication with healthcare providers, this platform is enabling pharma companies to improve their engagement with stakeholders. As a cloud-based system, it is flexible, scalable, and customizable to meet the specific needs of the healthcare industry. Embracing this technology can provide pharmaceutical companies with a competitive edge in a crowded market, and ultimately enhance their ability to drive innovation and improve patient outcomes.

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